

**What is claimed is:**

1. An in-vehicle hands-free apparatus for making a hands-free call using a telephone in a car, comprising:

a storage unit operable to store a voice of a party on the other end of the hands-free call uttered during said call;

a situation analysis unit operable to analyze a surrounding situation of the car based on information outputted from at least one sensor for detecting the surrounding situation;

an action determination unit operable to determine an action on a state of the call between a user of the telephone and the party based on a result of the analysis of the situation analysis unit; and

a playback output unit operable to play back the voice of the party stored in the storage unit based on the action determined by the action determination unit and output said voice for the user.

2. The in-vehicle hands-free apparatus according to Claim 1, wherein the action determination unit switches the state of the call by selecting either a call state in which a call can be made or a hold state in which a call cannot be made.

3. The in-vehicle hands-free apparatus according to Claim 2, wherein the playback output unit plays back the voice of the party stored in the storage unit and outputs said voice for the user when the action determination unit switches the state of the call from the hold state to the call state after switching from the call state to the hold state.

4. The in-vehicle hands-free apparatus according to Claim 3, wherein the playback output unit plays back the voice of the party stored in the storage unit, starting from a section of said voice stored at a point of time before the action determination unit switches the state of the call from the call state to the hold state.

5. The in-vehicle hands-free apparatus according to Claim 4,  
wherein the playback output unit plays back the voice of the  
party stored in the storage unit, starting from a break of syllables in  
5 said voice.

6. The in-vehicle hands-free apparatus according to Claim 3,  
wherein the playback output unit includes:  
a hold time measurement unit operable to measure a hold  
10 time from a point of time when the action determination unit  
switches the state of the call from the call state to the hold state  
until a point of time when the action determination unit switches the  
state of the call from the hold state to the call state; and  
a playback control unit operable to determine not to play back  
15 the voice of the party stored in the storage unit in a case where the  
hold time measured by the hold time measurement unit is shorter  
than a predetermined threshold.

7. The in-vehicle hands-free apparatus according to Claim 3,  
20 wherein the playback output unit includes a playback speed  
control unit operable to control a playback speed of the voice of the  
party stored in the storage unit.

8. The in-vehicle hands-free apparatus according to Claim 7,  
25 wherein the playback output unit further includes an elapsed  
time measurement unit operable to measure a time which has  
elapsed since the action determination unit switched the state of the  
call from the call state to the hold state, and  
the playback speed control unit plays back the voice of the  
30 party stored in the storage unit at a speed faster than a normal  
speed in a case where the elapsed time measured by the elapsed  
time measurement unit is equal to or longer than a predetermined

threshold.

9. The in-vehicle hands-free apparatus according to Claim 3, further comprising:

- 5 a first message generation unit operable to generate, when the action determination unit switches the state of the call from the call state to the hold state, a voice delivery message notifying that the voice of the party uttered during the hold state including a point of time of the switching is delivered to the user; and
- 10 a sending unit operable to send the voice delivery message to a communication apparatus of the party.

10. The in-vehicle hands-free apparatus according to Claim 9, wherein the first message generation unit further generates a

15 hold message notifying that the action determination unit has switched the state of the call from the call state to the hold state and a hold cancellation message notifying that the action determination unit has switched the state of the call from the hold state to the call state, and

- 20 the sending unit sends the hold message to the communication apparatus of the party the instant that the action determination unit has switched the state of the call from the call state to the hold state, and sends the hold cancellation message to the communication apparatus of the party the instant that the action
- 25 determination unit has switched the state of the call from the hold state to the call state.

11. The in-vehicle hands-free apparatus according to Claim 10, wherein the sending unit sends the voice delivery message

30 and the hold message to the communication apparatus of the party repeatedly until the playback output unit ends the playback of the voice of the party stored in the storage unit.

12. The in-vehicle hands-free apparatus according to Claim 3,  
further comprising a second message generation unit operable to  
generate a playback message notifying that the playback of the  
5 voice of the party stored in the storage unit is to be started,

wherein the playback output unit plays back the playback  
message and outputs said playback message for the user before  
starting the playback of said voice.

10 13. The in-vehicle hands-free apparatus according to Claim 12,  
wherein the second message generation unit further  
generates a hold message notifying that the action determination  
unit has switched the state of the call from the call state to the hold  
15 state and a hold cancellation message notifying that the action  
determination unit has switched the state of the call from the hold  
state to the call state, and

the playback output unit outputs the hold message for the  
user the instant that the action determination unit has switched the  
state of the call from the call state to the hold state, and outputs the  
20 hold cancellation message for the user the instant that the action  
determination unit has switched the state of the call from the hold  
state to the call state.

14. The in-vehicle hands-free apparatus according to Claim 1,  
25 wherein the storage unit has a storage area divided into a  
plurality of areas for storing the voice of the party uttered during the  
call, and

said voice of the party is divided into sections and stored in  
the plurality of areas so that the divided sections of the voice  
30 overlap partly each other.

15. A hands-free call method for making a hands-free call using a

telephone in a car, comprising:

a recording step of recording a voice of a party on the other end of the hands-free call during said call;

5 a situation analysis step of analyzing a surrounding situation of the car based on information outputted from at least one sensor for detecting the surrounding situation;

an action determination step of switching a state of the call between a user of the telephone and the party by selecting either a call state in which a call can be made or a hold state in which a call cannot be made, based on a result of the analysis in the situation analysis step; and

10 a playback output step of playing back the voice of the party recorded in the recording step and outputting said voice for the user when the state of the call is switched from the hold state to the call state after being switched from the call state to the hold state in the action determination step.

16. The hands-free call method according to Claim 15,  
20 wherein in the playback output step, the voice of the party recorded in the recording step is played back, starting from a section of said voice stored at a point of time before the state of the call is switched from the call state to the hold state in the action determination step.

25 17. The hands-free call method according to Claim 15,  
wherein the playback output step includes:  
a hold time measurement substep of measuring a hold time from a point of time when the state of the call is switched from the call state to the hold state until a point of time when the state of the call is switched from the hold state to the call state in the action determination step; and

30 a playback control substep of determining not to play back the

voice of the party recorded in the recording step in a case where the hold time measured in the hold time measurement substep is shorter than a predetermined threshold.

5 18. The hands-free call method according to Claim 15,  
wherein the playback output step includes:  
a playback speed control substep of controlling a playback  
speed of the voice of the party recorded in the recording step; and  
an elapsed time measurement substep of measuring a time  
10 which has elapsed since the state of the call was switched from the  
call state to the hold state in the action determination step, and  
in the playback speed control step, the voice of the party is  
played back at a speed faster than normal speed in a case where the  
elapsed time measured in the elapsed time measurement substep is  
15 equal to or longer than a predetermined threshold.

19. The hands-free call method according to Claim 15, further  
comprising:

20 a first message generation step of generating, when the state  
of the call is switched from the call state to the hold state in the  
action determination step, a voice delivery message notifying that  
the voice of the party uttered during the hold state including a point  
of time of the switching is delivered to the user; and

25 a sending step of sending the voice delivery message to a  
communication apparatus of the party.

20. The hands-free call method according to Claim 15, further  
comprising a second message generation step of generating a  
playback message notifying that the playback of the voice of the  
30 party recorded in the recording step is to be started,

wherein in the playback output step, the playback message is  
played back and outputted for the user before the playback of said

voice is started.

21. A program for an in-vehicle hands-free apparatus for making a hands-free call using a telephone in a car, the program causing a  
5 computer to execute:

a recording step of recording a voice of a party on the other end of the hands-free call during said call;

a situation analysis step of analyzing a surrounding situation of the car based on information outputted from at least one sensor  
10 for detecting the surrounding situation;

an action determination step of switching a state of the call between a user of the telephone and the party by selecting either a call state in which a call can be made or a hold state in which a call cannot be made, based on a result of the analysis in the situation  
15 analysis step; and

a playback output step of playing back the voice of the party recorded in the recording step and outputting said voice for the user when the state of the call is switched from the hold state to the call state after being switched from the call state to the hold state in the  
20 action determination step.